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## Vascular Disease

### **PATHOLOGY OF ATHEROSCLEROTIC PLAQUES RETRIEVED BY EXCISION WITH GENE AND PROTEIN ASSESSMENT FOR THE PREDICTION OF CLINICAL OUTCOMES IN PERIPHERAL ARTERY DISEASE**

ACC Moderated Poster Contributions

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**Background:** Despite the progress in endovascular treatment for peripheral artery disease (PAD), the long-term patency rate is still suboptimal, particularly for diabetic patients. Atherosclerotic plaque characteristics may be predictive of future events in patients with PAD; however, morphological plaque features and biomarkers for the risk stratification have not been reported.

**Methods:** The current study was conducted as part of the DEFINITIVE LE study, where excised plaque using the SilverHawk® Peripheral Plaque Excision Systems (Covidien/ev3, Plymouth, MN) from 113 de novo lesions located in the superficial femoral artery of 92 patients with claudication (diabetic=46, 50%) were evaluated. Immunohistochemistry was performed for macrophages (CD68, CD163, CD206), T-lymphocytes (CD3), HLA-DR, red blood cells (glycophorin A), endothelial cells (ulex), smooth muscle cells (HHF), Toll-like receptor 4, RAGE and ENRAGE, which were all graded semi-quantitatively with a blinded manner. RNA and protein profiling were performed in randomly selected 40 cases where a total of 90 genes and 15 proteins were evaluated.

**Results:** Primary patency rate at 6 months as assessed by duplex did not differ significantly between diabetic and non-diabetics (84% vs. 74%,  $p=0.37$ ) where lesion pathology and inflammatory markers were also similar between the groups. In contrast, the presence of lesional thrombi ( $n=27$ , 29%) was significantly associated with a lower patency rate as compared to non-thrombotic lesions (61% vs. 85%,  $p=0.04$ ). Patients with thrombus had higher CD163, HLA-DR, and glycophorin A expression than those without thrombus ( $p=0.01$ ,  $p=0.02$  and  $p=0.01$ , respectively). Thrombotic cases also showed increased expression of select inflammatory genes with fold change  $>2$  such as IL-6, IL-8 and chemokines (CXCL1, 2, 3, and CCL13) as well as increased levels of inflammatory proteins including IL-6 and IL-8.

**Conclusions:** The presence of lesional thrombi in plaque excision specimens was associated with a significant decrease in patency at 6 months with increased expression of several inflammatory markers, suggesting that recognition of thrombi may warrant more attentive follow-up in patients with PAD.